

## Chronology of Events and COGCC Actions

May 2001	COGCC issued the original NTO for drilling in Williams Fork in Garfield Co.: “Garfield-Rulison NTO”
March 2004	<p>Arbaney event- Magic 10-2 well experienced gas kick, explosion/seismic event during drilling</p> <ul style="list-style-type: none"><li>• Raised initial concerns regarding drilling operations in the area</li></ul> <p>Schwartz well- loss of 4000 ft of cement and bradenhead pressure build-up of 660 psi</p> <ul style="list-style-type: none"><li>• Divide Creek seep began</li></ul>
July 2004	COGCC issued original Cementing NTO
March 2006	URS study compiled data from 924 wells showed median surface casing depth of 1013; (>2000’ above base of Wasatch aquifer ); 97 wells had surface casing <600 ft
June 2006	<p>COGCC issued the “Surface Casing and Modification of Leak Off Test Requirements” NTO which amended the May 2001 NTO</p> <ul style="list-style-type: none"><li>• Required surface casing to 1100 ft in defined Rulison Field Overpressured Area</li><li>• Otherwise left surface casing requirement at 10% of total well depth</li></ul>
February 2007	<p>COGCC revised July 2004 Cementing NTO with “Well Cementing Procedure and Reporting Requirement” NTO</p> <ul style="list-style-type: none"><li>• Based on results of Phase I Hydrogeological Characterization done by Garfield Co.</li><li>• Required production cement to be set to 500 ft above Top of Gas (TOG)</li><li>• Required surface casing to be set at 15% of well depth or 500 ft below nearby water well (seems to supersede surface casing requirement in June 2006 NTO)</li></ul>
Fall 2008	COGCC began requiring Sundry Notices for venting of bradenhead gas
February 2009	COGCC began requiring compositional and isotopic bradenhead gas analysis
2009	USGS completed study showing that deep biogenic gas is widely present in domestic wells; indicated both natural faults/structures and uncemented wellbores as pathways
July 2010	<p>COGCC issued Bradenhead NTO for Buzzard, Mamm Creek and Rulison fields</p> <ul style="list-style-type: none"><li>• Required annual bradenhead annulus monitoring and reporting of pressures &gt;150 psi</li></ul>
June 2011	COGCC consultant completed “East Mamm Creek Project Drilling and Cementing Study”
Sept 2011	COGCC responded to the Study conclusions and recommendations